

than Mell suggests. *Jordana* nearly always stridulates if provoked by rough handling and in this situation stridulation must be a defensive reaction. We have only Mell's observations on *menephron* as testimony to the ineffectual protection afforded by stridulation.

It is perhaps worthy of note that the surface sculpturing of normal scales on the genitalia of *jordana* and that of the modified plectrum-scales is dissimilar. Plate figures 4 and 5 are electron micrographs of the ridges on normal and plectrum-scale surfaces respectively at a magnification of  $\times 6000$ . Plate figures 6 and 7 show the scales and their ridges at  $\times 600$  magnification.

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### *Cupido osiris* Meigen (*sebrus* Hb.)

## Observations on the Cohabitation of ssp. *sebrus* and ssp. *bernardiana* in the French Alps

By M. J. PERCEVAL

Two subspecies of *Cupido osiris* Meigen occur in France, the larger more northern ssp. *bernardiana* Beuret and the smaller southern ssp. *sebrus* Hb. Bretherton (1) gives the respective ranges of *bernardiana* as the Alps and pre-Alps of Savoy and spreading into Switzerland in the Jura, Valais and Ticino, and of *sebrus* as the Basses Alpes and Alpes Maritimes, and reaching west of the Rhone into Ardeche, Gard and Herault.

The distribution, ecology and possible evolution of the two subspecies have been discussed at some length by Descimon (2). While he does not deal with the point of contact between them, he says that their taxonomic relationship should be looked at and that it would be interesting to study their intergrading and

possible co-habitation in the middle valleys of the Basses Alpes.

As a meeting point and the resultant population appear not to have been previously recorded or studied, the following observations may be of interest, especially in view of the rather unexpected results.

During July 1970 I took a short series of *osiris* from one restricted locality at a height of about 1750 metres some two miles to the south west of Col du Lautaret in the Hautes Alpes. An examination of these showed an unusual size distribution, 6 specimens being uniformly small and 11 much larger. I was able to return to the locality again in July 1971 and over a six day period I took and examined a further 74 specimens. These ranged in wing span from 22 mm.-35 mm. but again fell into two quite distinct size groups. Although the area is somewhat north of that suggested by Descimon, it appears that the population in this locality is a mixed one containing both ssp. *sebrus* and ssp. *bernardiana*.

My total sample of 91 specimens taken over the two years comprised 78 males and 13 females. The size distribution of the males is shown in fig. 1 (76, 2 having been removed for examination of genitalia). It can be seen that they fall into two distinct categories, 22-27 mm. and 29-35 mm., the average size in each being 25.4 mm. and 31.8 mm. respectively. The larger group appear to be typical *bernardiana* and the small group *sebrus*, although they are somewhat smaller than some *sebrus* from the Basses Alpes. Apart from the obvious size difference between the two subspecies, the only other distinction in the males is the degree of spotting on the underside hindwings. In this species some spots are almost always present, these are the single spot in 1b, the double spot in 1c, the discal spots in 4, 5 and 7 and the basal spot in 7. The discal spots in 2, 3 and 6, and the cell spot are much more variable often very much reduced or absent. In this population the tendency for incomplete spotting was however much more marked in *sebrus* than in *bernardiana*, in fact only two specimens in the sample of *sebrus* (10%) had the full compliment of spots compared with 27 specimens in the sample of *bernardiana* (50%). As would be expected, an examination of the genitalia showed no differentiation. The organs of *bernardiana* were slightly larger but without any material distinction.

Turning now to the much smaller sample of females, the size distribution is shown in fig. 2. Again they fall into two separate size groups, 26-28 mm. and 31-33 mm. The *bernardiana* females appear typical, although all of them have weak blue scaling at the base upper side extending in some cases to the middle of the forewings. The *sebrus* are however untypical. *Sebrus* generally has perhaps one of the bluest females of any *osiris* subspecies. Specimens without trace of blue scaling are rare and I was unable to find any in the B. M. collection which has quite an extensive series from the Basses Alpes. In my small sample however, of only 5 specimens 4 are completely black-brown, with no trace of blue, they are in fact

much more like the females of the Spanish subspecies *pseudolorquinii* than typical *sebrus*.

SIZE DISTRIBUTION OF SAMPLE

FIGURE I : MALES

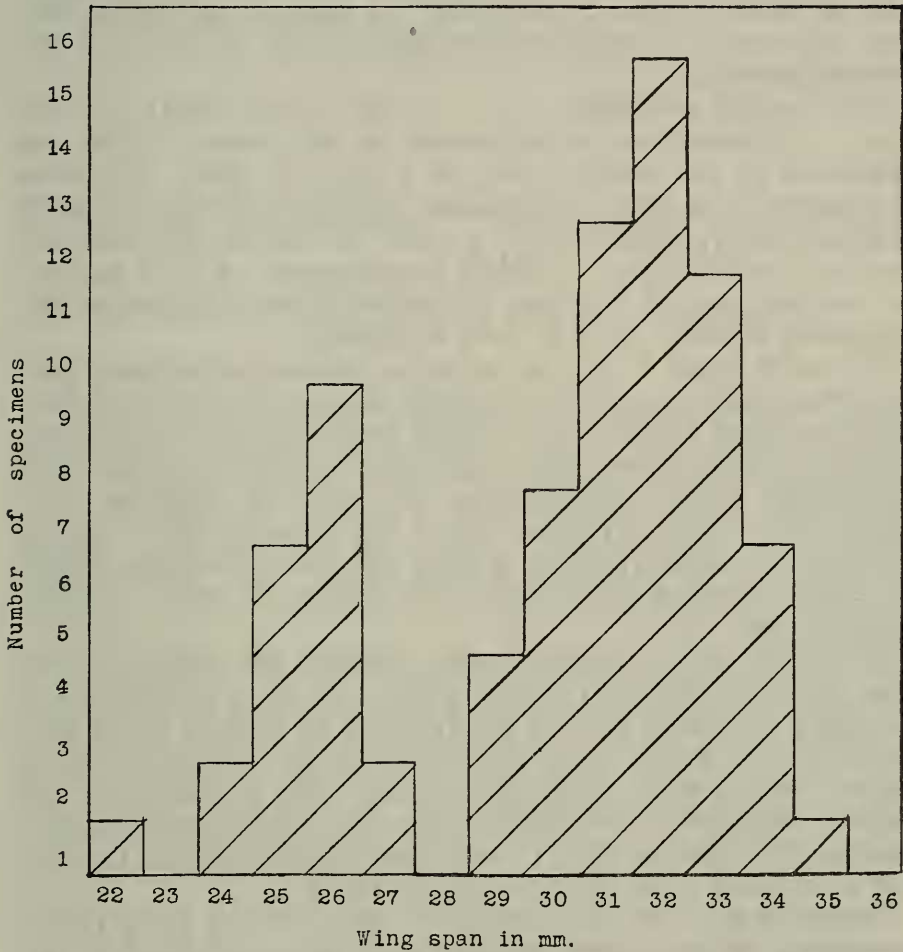
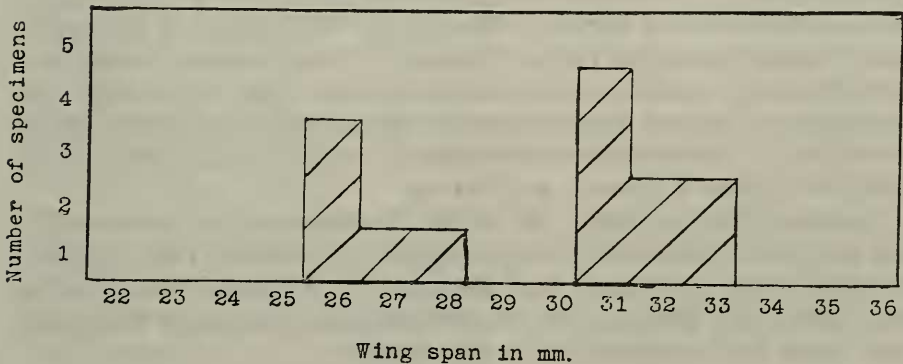


FIGURE II : FEMALES



It is clear from the foregoing description of the sample that *sebrus* and *bernardiana* seem able to co-habit and yet retain their independence. I can find no evidence to suggest the

existence of the intermediate population that one might expect in such circumstances. The two subspecies appeared evenly distributed in the small locality and were flying together. Both subspecies exhibited the same proportion of worn and fresh specimens indicating that no difference existed in their time of emergence. A number of individuals were observed in copulation but always with members of the same subspecies.

The sample was taken over two years but mostly at one time. It is therefore an indication of the status of the two subspecies in the locality only at a point in time. It shows the population as 73% *bernardiana* and 27% *sebrus*. Although *bernardiana* predominates in a ratio of almost 3-1, both appear well established. Further examination of this population will be needed to show if the relationship between the subspecies is static or in a state of change.

It would seem from the evidence of this population that these two subspecies of *osiris*, while obviously closely related, do not produce a cline or even any recognisable intermediate population where they meet. They can coexist together, both maintaining their independence and separate identity. Although they seem to have every opportunity they appear either not to interbreed, or if they do, with insufficient fertility. This unusual situation would appear to merit further consideration.

It may be noted that my measurements are different from those given by Beuret (3). He gives *sebrus* as 22-26 mm. in the males and 23-25 mm. in the females as against 27-30 mm. and 25-27 mm. respectively for *bernardiana*. Bearing in mind that my *sebrus* were somewhat smaller than average, the difference would be accounted for if Beuret's measurements were taken on the basis of direct wing expanse rather than the method I adopted, apex to centre of thorax X 2.

Finally a note on nomenclature. Higgins and Riley (4) by suppressing *sebrus* as the specific name seem to have left the subspecific nomenclature in some confusion. As Hubner gave no type locality for his *sebrus*, that of Boisduval's later work, namely St. Maximin Var, was accepted. However, as Meigen's *osiris* probably came from Vienna, it now seems incorrect to continue to consider ssp. *sebrus* as the type, especially, as according to Beuret the subspecies from the two areas differ markedly. I have thus continued to refer to the subspecies from the South of France as *sebrus*.

I should like to thank Mr R. F. Bretherton for his invaluable help with information from earlier works on this species, especially that of Beuret and Descimon. I should also like to thank Dr L. G. Higgins who examined the genitalia of specimens from both subspecies in my sample.

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## Collecting in Jamaica : September and October 1971

By C. G. M. de WORMS and T. J. G. HOMER

### *Part I by Dr de Worms :*

Having sampled the lepidoptera of two of the most prolific islands in the Caribbean chain, Grenada and above all Trinidad, in the spring of 1968 (*Ent. Record*, **81**: 33), I had an urge to visit some further rich regions in that delectable part of the New World. Jamaica was an obvious choice what with its very luscious and wild vegetation and stories of the fabulous endemic *Papilio homerus* L. by far the largest and in many ways the most spectacular true Swallow-tail in the Americas. The opportunity to visit this wonderful island arose through the most kind and cordial invitation of Dr Charles Goodall and his wife who had recently migrated there from England to take up a medical practice at Port Antonio on the north-east coast. Mr Theodore Homer, who had already been to Jamaica by sea on two previous occasions, arranged to coincide with my arrival in early September by travelling out in one of the banana-carrying ships which also accommodates a few passengers.

I flew out from Heathrow on the morning of 7th September direct to Bermuda where after a brief stop we continued the 3500-mile journey to Kingston, arriving there at 4 p.m. local time with the thermometer standing at 92°F in the shade. Dr Goodall had kindly sent a car to meet me at the airport situated on a tongue of land reclaimed from the sea on the south side of the famous harbour. We then travelled by the coastal road the 80 miles to Williamsfield some three miles east of Port Antonio where, as dusk was falling, I had a warm welcome from Charles and Helen Goodall as well as from Theodore Homer who had arrived the previous day. En route we had seen the devastation wrought in the cocoanut groves by the virus disease which affects the stem and causes the whole tree to wilt and die.

Williamsfield House which was to be my haven for the next fortnight was situated on an eminence at the edge of the former virgin forest within half a mile of the sea. It was almost surrounded by an orchard of bananas and other fruit